Amendments to the Claims

Please amend Claims 1-6, 29-35, 38-40, 41, and 43-44. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Currently Amended) In a multi-point communications system having a receiver and transmitter disposed at a primary site for communication with a plurality of remote units disposed at respective secondary sites, an antenna comprising:

multiple receiving elements ~~for receiving~~ configured to receive communications signals over a carrier frequency from ~~said~~ the plurality of remote units, at least two receiving elements configured to receive the communication signals on a same frequency band during any period of time, ~~said~~ the receiving elements being partitioned into a plurality of groups disposed ~~remote~~ remotely from one another by at least a predetermined minimum group spacing sufficient to obtain spatial diversity, each group containing at least one receiving element, at least one group including multiple receiving elements located ~~proximate~~ proximal to one another and no ~~further~~ farther apart than a predetermined maximum receiving element spacing to facilitate spatial filtering.

2. (Currently Amended) The communication system of claim 1, wherein ~~said~~ the predetermined maximum receiving element spacing is no more than one-half times a wavelength corresponding to the carrier frequency.

3. (Currently Amended) The communication system of claim 1, wherein ~~said~~ the predetermined minimum group spacing is at least five times a wavelength corresponding to the carrier frequency.

4. (Currently Amended) The communication system of claim 1, wherein ~~said~~ the multiple receiving elements constitute an adaptive antenna array and each group constitutes a sub-array.

5. (Currently Amended) The communication system of claim 1, further comprising means for electronically steering ~~said~~ the multiple receiving elements.

6. (Currently Amended) The communication system of claim 1, wherein ~~said~~ the multiple receiving elements constitute a switched beam antenna array.

7-28. (Cancelled)

29. (Currently Amended) A multi-point communications network comprising:

a receiver and transmitter disposed at a primary site;

a plurality of remote units disposed at respective secondary sites for communication with ~~said~~ the receiver and transmitter at ~~said~~ the primary site;

~~said~~ the primary site having an antenna including multiple receiving elements for ~~receiving~~ configured to receive communications signals over a carrier frequency from ~~said~~ the plurality of remote units, at least two receiving elements configured to receive the communication signals on a same frequency band during any period of time, ~~said~~ the receiving elements being partitioned into a plurality of groups disposed ~~remote~~ remotely from one another by at least a predetermined minimum group spacing sufficient to obtain spatial diversity, each group containing at least one receiving element, at least one group including multiple receiving elements located ~~proximate~~ proximal to one another and no ~~further~~ farther apart than a predetermined maximum receiving element spacing to facilitate spatial filtering.

30. (Currently Amended) The network of claim 29, wherein ~~said~~ the predetermined maximum receiving element spacing is no more than one-half times a wavelength corresponding to the carrier frequency.

31. (Currently Amended) The network of claim 29, wherein ~~said~~ the predetermined minimum group spacing is at least five times a wavelength corresponding to the carrier frequency.

32. (Currently Amended) The network of claim 29, wherein ~~said~~ the multiple receiving elements constitute an adaptive antenna array and each group constitutes a sub-array.

33. (Currently Amended) The network of claim 29, wherein ~~said~~ the antenna further comprises means for electronically steering ~~said~~ the multiple receiving elements.

34. (Currently Amended) The network of claim 29, wherein ~~said~~ the multiple receiving elements constitute a switched beam antenna array.

35. (Currently Amended) An adaptive antenna array architecture for communication, ~~said~~ the architecture comprising:

a plurality of adaptive antenna arrays for signal reception, wherein ~~said~~ the plurality of adaptive antenna arrays ~~comprise~~ including a plurality of sub-arrays, ~~wherein~~ each sub-array ~~includes~~ including at least two receiving elements, ~~wherein~~ the receiving elements in ~~said~~ the sub-arrays ~~are~~ being no ~~further~~ farther apart than a predetermined maximum receiving element spacing to facility spatial filtering, wherein ~~said~~ the sub-arrays ~~are~~ being spaced to obtain spatial diversity;

an array fixation structure ~~for mounting said~~ configured to position the plurality of adaptive antenna arrays;

an array support structure for positioning ~~said~~ the array fixation structure at a desired elevation; and

a base station ~~for controlling said~~ configured to control the adaptive antenna array architecture.

36.-37. (Cancelled)

38. (Currently Amended) A signal receiver for receiving communications signals, ~~said~~ the receiver comprising:

an adaptive array ~~for receiving~~ configured to receive signals from remote units;

a plurality of demodulator units ~~for processing~~ ~~said~~ configured to process the signals;

a plurality of beamformers for ~~constructing~~ configured to construct a desired signal response as a function of direction of arrival data of the signals; and

a spatial diversity combiner ~~for removing~~ configured to remove interference from ~~said~~ the signals.

39. (Currently Amended) The receiver of claim 38, further comprising a direction of arrival processor ~~for calculating~~ configured to calculate a direction of arrival for ~~said~~ the signals.

40. (Currently Amended) The receiver of claim 38, further comprising an orthogonal frequency division multiple access unit ~~for segmenting~~ configured to segment available bandwidth into a plurality of frequency bins for allocation.

41. (Currently Amended) A method for reducing signal interference, ~~said~~ the method comprising:

assigning at least one frequency bin to a user;

spacing ~~said~~ the at least one frequency bin belonging to ~~said~~ the user to at least one sufficiently different frequency as a function of minimizing signal strength of active bins to reduce inter-bin interference; and

locating ~~said~~ the at least one frequency bin with at least one frequency bin of other users such that directions of arrival for ~~said~~ the users are distinctly separable.

42. (Cancelled)

43. (Currently Amended) A method for allocating communication bandwidth, ~~said~~ the method comprising:

determining a first direction of signal arrival for a first remote user and a second direction of signal arrival for a second remote user;

assigning ~~said~~ the first remote user to a first frequency bin; and

assigning ~~said~~ the second remote user to a second frequency bin based at least in part on ~~said~~ the directions of signal arrival such that directions of signal arrival for adjacent frequency bins differ.

44. (Currently Amended) A method for avoiding interference in communications signals, ~~said~~ the method comprising:

partitioning available bandwidth into a plurality of frequency blocks, ~~said~~ the frequency blocks ~~comprising~~ including a plurality of bins;

assigning a user to a bin in each of ~~said~~ the frequency blocks; and

~~using signal power information to distribute said~~ distributing the bins within ~~said~~ the frequency blocks as a function of power of the bins.